Wall Street Journal

28 SEP 1966

Wallet Libraries

Many Companies Fight The Paperwork Pileup With Aid of Microforms

Small Pieces of Film Contain Thousands of Pages; Links With Computers Are Tried

Bible Is Two Inches Square

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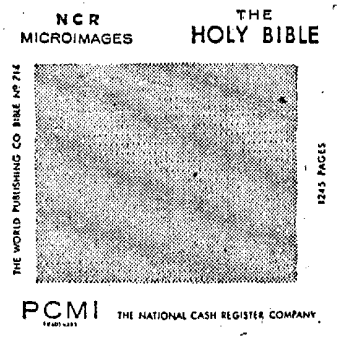
NEW YORK—The reader of the not-too-distant future may carry in his pocket the complete works of Shakespeare, the whole Encyclopaedia Britannica and a filing cabinet full of office paperwork—all on a few wallet-sized plastic cards.

This is the dream of the companies now producing microforms—tiny pieces of plastic that can hold a staggering amount of printed information reduced to microscopic size. The Lord's Prayer engraved on the head of a pin, for example, looks like a roadside billboard compared with the printing job below.

This is a microfilm produced by National Cash Register Co. to plug a new filing system it is offering. The two-inch square contains



all 1,245 pages of one edition of the King James Bible—each page about the size of a paramecium, the one-celled animal that generations of biology students have squinted at through microscopes. In its new filing system, NCR promises to condense as many as 3,200 pages on a four-by-six-inch piece of film.

The microform is fast becoming a major tool of business in its struggle to cope with the paperwork explosion. Across the country, corporations and other users are compressing scores of cubic feet of conventional documents into microforms that would barely fill a shoe box. They are finding it a lot easier to store, update and retrieve information from microforms than from roll microfilm, a principal medium for records storage since the 1920s. In some cases, they have launched a double-barreled attack on paperwork bulk by having computers print their output on the tiny pieces of film.

Microforms—or microfiche, as such super-reduced film transparencies are often called—got a mighty boost from Uncle Sam in July 1964, when the Government decided to use them in distributing technical reports from defense agencies to businesses. "Since then fiche has been the wave of the future in office paperwork simplification," says James Hughes, editor of Systems, a magazine dealing with time and space saving in business procedures.

A few months ago the U.S. Patent Office granted a $2 million contract to Recordak, a subsidiary of Eastman Kodak Co., to put all the 3,250,000 patents granted by the office since 1790 on small cards with microform windows, known in the trade as aperture cards. Edward J. Brenner, commissioner of patents, says the cards will release much-needed space at the patent office and save an estimated $500,000 a year in the cost of filling demand for 25,000 copies of patents every day.

Fiche producers' dreams of a wallet-sized library for the general reader may become reality before too long. At least two major popular publishers are considering putting out reference and education volumes on fiche, at sharply reduced prices. "This could mean a revolution in the book and magazine field," says one fiche manufacturer.

Wanted: A Cheap Reader

Such a development would hinge on the perfection of a low-priced device to "blow up" the microform images so they could be read. Current prices of such "readers" generally range between $100 and $400. "It won't be long, once mass production of microforms takes hold in the popular publishing field, before they could be much less expensive," says Alex Baptic, president of the National Microfilm Association.

At present, the business world is the biggest customer for fiche. Users send their paperwork or roll microfilm to a specialist concern for reduction and get back microforms ready for the reader. The reduction processes vary from maker to maker, but generally speaking they rely on a system of high-performance lenses and film capable of reproducing extremely tiny images without blurring.

NCR uses a film coated with a layer of photosensitive dye one molecule thick. It darkens where ultraviolet light strikes it. This "photochromic" film has no "grain" at all, so extremely tiny images can be reproduced on it without any blurring or fuzziness.

Users of microfiche report big savings in office space and in time taken to retrieve information. Since last September National Acme Co., a Cleveland-based machine tool maker, has spent $35,000 putting 8,000 of its 11,000 customer files on microfiche. It now stores them in a space a couple of typewriters could occupy, compared with 38 feet of files in the basement previously required. Richard Kozel, National Acme's supervisor of engineering records, says it only takes a clerk 30 seconds to find specifications for replacement parts of retooling on a customer order compared with up to 10 minutes under the old conventional file system.

It also is easier to find a given reference page on fiche than on conventional roll microfilm. Fiche cards can be numbered in columns across the top and rows along the side, and contain an index telling the data seeker where to find the page he wants—say column 40,

Please Turn to Page 12, Column 2

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row 17. The reading machine is capable of moving to the desired reference page quickly. A user of roll microfilm has to crank his way laboriously through the roll.

The Micro Photo division of Bell & Howell Co. conducted a study showing that retrieval of one page of information from 40,000 pages stored on 700 pieces of fiche took an average of 10 seconds. "The same search would take more than a minute on a microfilm roll of 2,400 images and updating the latter would mean reprocessing the whole roll; updating fiche would involve processing only a single microcard," says Milton Mandell, division manager.

This makes fiche particularly well suited for "active files—those consulted often or requiring frequent updating. In the latter case, the cost of maintaining files on fiche can be one-tenth the cost of keeping them on roll microfilm, according to officials of companies turning out both products. For "dead" files ordinary roll microfilm is generally best, these companies add.

There are plenty of other applications for fiche. The Micro Catalog division of Thomas Publishing Co. has complete descriptions and other information about 21,000 products of 1,350 vendor companies on fiche. Organized into "micro-catalogs," the information is sold to some 800 subscriber companies who pay $320 for the "books" and $155 annually for updating. Customers who formerly needed a full wall of filing cabinets to keep the same information can now store it in a shoe box-sized container. Thomas, a big user of fiche, also publishes other information on it.

The Republic Aviation division of Fairchild Hiller Corp. is now studying better ways to put library material on fiche, under a $65,000 contract from the Council on Library Resources. Republic has come up with a fiche that will hold 9,801 pages on a four-by-five-inch piece of film and enable a person to find a given page on it within seconds with the aid of an electronic viewer system.

"One day it may be possible to put an entire encyclopedia or all the outstanding research on insects on a few film cards that could be scanned for a specific page within microseconds by a digital computer," theorizes an official of Republic.

Some fiche users already are teaming computers with the tiny film cards. Mr. Baptie, head of the microfilm association and also president of Microcard Corp., West Salem, Wis., says a mail order house (one of his customers) is perfecting a method of storing credit ratings and other information about customers in a computer and getting "readout" on fiche. When an order comes in, the customer's name is fed to the computer. Information about the prospective buyer then is transformed into fiche on the spot and displayed on a screen. The fiche is then filed for future reference.

According to Mr. Baptie, this method will speed order handling and credit checking, and cut down the need for dozens of thick books containing such information. "The retailer ought to save thousands of dollars a year and cut down on storage space, too," he says.

Hospitals are finding fiche a boon. Since April 1965, St. Luke's Presbyterian in Chicago has spent $85,000 to put data on 150,000 past and present patients on fiche. The information, which used to fill six rooms, now occupies a few file cabinets in one room.

"We can now find patient records in seconds compared to up to 10 hours before," says Elizabeth Price, hospital medical records librarian. "This speed could easily save lives by enabling us to find the proper medication for a person quickly."

Atlantic Microfilm Corp. in Spring Valley, N.Y., says demand for its microfiche by hospitals has tripled in less than two years. Atlantic now does work for more than 500 hospitals.

Information specialists believe that fiche has applications almost without limit. D.A.T.A., Inc., an Orange, N.J., concern, is now putting on file 25,000 specification sheets for the 5,750 types of transistors available in the U.S. The imprinted fiche is for sale to commercial and government customers. The chemical engineering section of Borden Co. is condensing paperwork on building specifications for six petrochemical plants into a small file box of fiche; the data previously occupied 24 feet of shelf space. A major chain store retailer and an auto company are considering putting product and parts catalogs on fiche to save thousands of dollars in mailing and reprinting costs.

As the paperwork shrinks, fiche makers' fortunes expand. Albert Dunning, a consultant who recently completed a study for the microfilm association, estimates total sales for the industry will soar to $500 million a year by 1970 from $350 million last year. The 1964 volume was $300 million. "There's no question the big push has come from fiche," he says. He adds that corporate giants such as International Business Machines Corp., Xerox Corp. and Minnesota Mining & Manufacturing Co. are taking hard looks at the industry's potential, and have moved into some phases of it already.